

# AMERICAN BEE JOURNAL



GEORGE W. YORK,  
Editor.

CHICAGO, ILL., NOVEMBER 29, 1900.

FORTIETH YEAR.  
No. 48.

WEEKLY



MR. ED. BERTRAND,  
Editor of the "Revue Internationale d'Apiculture,"  
Nyon, Switzerland.

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**Reformed Spelling.**—The American Bee Journal adopts the Orthography of the following Rule, recommended by the joint action of the American Philological Association and the Philosophical Society of England:—Change "d" or "ed" final to "e" when so pronounced, except when the "e" affects a preceding sound. Also some other changes are used.

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# AMERICAN ESTABLISH'D IN 1861 BEE JOURNAL THE OLDEST BEE-PAPER IN AMERICA

40th YEAR.

CHICAGO, ILL., NOVEMBER 29, 1900.

No. 48.

## \* Editorial Comments. \*

The Illinois State Convention was held last week at Springfield, and it was our pleasure to be present on Wednesday, the second day. While it was not largely attended, it was an interesting meeting. Mr. C. P. Dadant was present, besides Secretary Jas. A. Stone, Pres. J. Q. Smith, Treasurer Chas. Becker, and others.

The Illinois Association ought to have a larger membership. It offers a year's subscription to the American Bee Journal with a year's membership—all for only \$1.00. Now, there ought to be fully 500 bee-keepers in Illinois who would accept this generous offer.

In order to save trouble to those who wish to take advantage of the foregoing offer, we will say that if you wish to send to us your dollar, instead of Secretary Stone, we will see that you get a receipt for your membership in the Association for 1901—that is, provided you send us all back subscription due (if any), and also \$1.00 for 1901. By accepting this offer, you would not be entitled to any premium or be allowed to take advantage of any other offer we have made.

It seems to us that every bee-keeper in Illinois ought to have enough State pride to become a member of the State organization; and particularly when such easy terms are offered.

Remember, if you accept, be sure to mention that you want the membership also, so that we will know what to do.

**Will Cooling Slowly Make Bright Yellow Beeswax?**  
—An editorial in a bee-paper having said that the secret of getting bright yellow wax was to allow it to cool slowly, Editor Hill thought the space thus occupied would better have remained blank. Whereupon the question was asked in these columns:

"Now, will Editor Hill please tell us why? Is it that the information is of so little value that it is a waste of space, or because there is no bee-keeper who does not already know it?"

The answer given to this question illustrates anew what is so frequently illustrated, that difference of view comes often from a difference in view-points. Editor Hill introduces his reply by saying:

"Yes, we will try to tell why; tho at a loss to understand why such a request should be made by 'the oldest bee-paper in America.'"

It is only fair to say that the request was made in all sincerity, with an honest doubt as to whether the information was thought to be erroneous or already too well known. Possibly just because of being "the oldest bee-paper" the question was asked, for if Mr. Hill were old enough, or if he were to dig back far enough into the history of the past, he

would find, and without going back more than the matter of a quarter of a century, that at one time it was held as a "secret" that slow cooling would produce bright yellow wax.

Mr. Hill turns his attention almost entirely to the color of the wax, as white or yellow, and says truthfully that nothing in the way of cooling will change the color from white to yellow, or *vice versa*. If a beginner should send to him the question, "What is the secret of obtaining bright yellow wax?" he might be supposed to reply, "There is no way of changing white wax to yellow. The color is a part of the wax."

If Mr. Charles Dadant were asked the same question, he would probably pay little attention to the word "yellow," and mentally put the emphasis on the word "bright," understanding his questioner to say something like this:

"I see cakes of bright yellow wax that are made by others, but mine have not the same brightness of appearance, and have a dull or dirty look. How can my wax be made into bright yellow wax?"

And taking the question from that point of view, the veteran foundation manufacturer would probably reply:

"The secret of bright yellow wax is slow cooling. Melt your wax and let it be a long time cooling, so the impurities will have time to settle, and it will be as bright as the wax of others that you admire."

As a matter of fact, the slow cooling is a *sine qua non* in ninety-nine cases out of a hundred, and perhaps necessary in the one-hundredth case. As Mr. Hill mentions, some wax from old combs needs the addition of acid to bring out the bright color, but that does not take away the necessity of slow cooling, and there is practically no bright yellow wax without slow cooling. Indeed, it is a bit amusing to note that Mr. Hill emphasizes this point by mentioning it in three different places. He truthfully says:

"After a body of wax has been melted and permitted to remain at a high temperature for a sufficient length of time to allow the coarser particles of foreign matter to settle to the bottom, its color can not be perceptibly affected by the length of time occupied in the process of cooling."

That is, you must let it cool slowly enough so that it will be a bright yellow, and after that the cooling will make no difference in the color. Of course it must not be understood that slow cooling changes the color of wax, only as it gives time for impurities to settle.

It would not be right for that editor, who first called out this little discussion, to cultivate a spirit of retaliation, but if he should weakly give way to a spirit of that kind, it would be nothing strange to hear him ask Editor Hill:

"If to get bright yellow wax it is of so little consequence to have the wax cool slowly, would it not be better, instead of occupying nearly a third of a column saying that it must cool slowly, that you should run in a lot of slugs and quads?"

**Colorado and Moths.**—In the Progressive Bee-Keeper, page 327, F. L. Thompson, referring to what was said in the American Bee Journal about moths in Colorado, objects

to the words, "the moth that infests comb honey there," and says, "An injustice has been, and is, done to Colorado bee-keepers by allowing those words to stand without retraction." Mr. Thompson calls attention to the fact that it was the editor who used the words, but he seems not to have noticed the equally prominent fact that in the same item it was no less an authority than Prof. Gillette, a Colorado man, occupying a chair in the State Agricultural College of Colorado, who said, "there is a small moth....which I have repeatedly seen infesting honey-comb.....and I have seen them in crated sections of comb honey." The American Bee Journal has neither motive nor desire to do injustice to Colorado bee-keepers, and it is not likely that many Colorado bee-keepers feel that any injustice has been done. Will Mr. Thompson please answer just one question: When Prof. Gillette said, "I have seen them in crated sections of comb honey," was he not speaking of the larvae of the moth that infests comb honey there?"

## \* The Weekly Budget. \*

MR. W. L. PORTER, of Arapahoe Co., Colo., made us a very pleasant call Nov. 13th, when on his way to visit in Michigan and elsewhere. Mr. Porter's honey crop the past season was something like 30,000 pounds, about one-third being comb honey. He has four apiaries, being one of the big bee-keepers of that great honey State.

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MR. GEORGE E. DUDLEY, of Arapahoe Co., Colo., writing us Nov. 12th, said:

"The bee-keepers have not been very prosperous in the West for the past two years, tho honey has been quite high. Owing to the lack of rain and the grasshoppers the crop has been very light. In Colorado the honey crop was fair, and the last carloads of comb honey sold in Denver for \$3.00 per 24-section case."

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FATHER JOSHUA TERRY, of Salt Lake Co., Utah, called on us last week when he was attending the national irrigation congress which met here. Father Terry is 76 years old, a pioneer of three States—Utah, Wyoming, and Idaho—and is the oldest living mountaineer in the West. He certainly is a patriarch, and can give some wonderful accounts of life among the Indians and in that wild country a half century ago. He has been a bee-keeper for some 30 years, but lately his apiary has been run down from 90 to 13 colonies, on account of the smelter smoke, it is thought.

We hope Father Terry may survive yet many years, and continue to be one of our oldest esteemed readers of the American Bee Journal.

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MR. THOS. WM. COWAN, whose splendid convention paper appears on page 758, sent the following explanatory letter with it to Secretary Mason:

PACIFIC GROVE, CALIF., Aug. 17, 1900.

DEAR DR. MASON:—I have much pleasure in sending you a paper on the Chemistry of Honey. I have endeavored to write it in such a way that every one should clearly understand what I mean, and I hope it may be of some use in clearing up some of the confusion that exists in a few minds about honey, glucose, and sugar. I have tried to make it as short and concise as possible, and I hope it will not be considered too lengthy. You will see that the chemical make-up of glucose is not the same as honey, if we understand by glucose the common sense of the term, namely, commercial glucose.

I am sorry I shall not be able to be with you at Chicago, so you must convey my greetings to the bee-keepers assembled, and say I hope they will have a successful meeting. I

should certainly have greatly enjoyed being with you, and meeting those I have seen before, and the larger number of those of whom I have only read. I hope you will enjoy the convention.

Yours very truly,  
THOS. WM. COWAN.

The National Association, and bee-keepers in general, can count themselves very fortunate in being permitted to have among their number a man of such great ability as Mr. Cowan—and one who is so willing to impart his large fund of information for the benefit of all beedom. We esteem it no little honor to number Mr. Cowan among our personal friends, and are glad that now he is practically one of the United States bee-keepers, seeing he makes his home with his son in California, tho still editor of the British Bee Journal, publisht in London.

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THE DEATH OF EDITOR HUTCHINSON'S FATHER, at the age of 82, was chronicled on page 724. Those who know Mr. Hutchinson's kind heart will not be surprised at the following reminiscence of his father:

I can remember, soon after we came from York State, our one cow wandered so far into the woods in search of better pastures that she did not reach home until the next day. Did father get a fish-pole and proceed to dress her down? No, sir! He went into the house and spread a big slice of bread and butter, sprinkled on a thick layer of sugar, and then fed it to the truant. I can remember yet how she bobbed her head up and down while she was eating it, and how she followed father around afterwards, and kept smelling and sniffing to see if she could find another sweet morsel.

The notice ends by the editor saying of his father what is much to say of any man, viz.: "Father was a Christian, a kind husband and father, and an honest and upright man."

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SECRETARY A. B. MASON, of Toledo, Ohio, writing us Nov. 17, had this to say about his bees, etc.:

FRIEND YORK:—Cold weather came on the 14th, and our bees went into the cellar yesterday in good condition. I had but little surplus honey this year—perhaps 25 pounds of extracted per colony.

Well, it's so late I believe I'll not send you an invitation to my 67th birthday (or is it the 68th?) anniversary, that comes to-morrow, but we'll not celebrate till the next day.

Very truly yours,

A. B. MASON.

Too bad we had to miss that anniversary occasion—both on account of receiving no invitation, and because Dr. Mason doesn't know any better than to live so far away from Chicago! Well, just the same we wish him a large number of returns of the day, before he shall be called to join the great majority of good bee-keepers and others who have "gone on before."

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MR. W. H. NEBLICK, of Indian Territory, we must thank for a nice box of open cotton-bolls, sent Nov. 5. He reported the cotton-fields as being white at that time, with no frost yet, and that bees had done well this year. We have never seen cotton growing, but think it would be a beautiful sight. We divided some of the cotton-bolls among the employees of this office, reserving several for our own home. They are ornamental in this locality, and will be prized by all.

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THE NOVELTY POCKET-KNIFE offered on page 765, will hereafter be \$1.25, or the knife and the American Bee Journal one year—both for \$1.90. In either case the knife is sent by registered mail. If wanted in time for using as a Christmas present, the order should be sent to us as early as possible. There is always a great rush for these knives a week or two before Christmas, and then they are more likely to arrive after Christmas than before, spoiling the effect of the present somewhat.

## Convention Proceedings.

### Report of the Proceedings of the 31st Annual Convention of the National Bee-Keepers' Association, held at Chicago, Ill., Aug. 28, 29 and 30, 1900.

BY DR. A. B. MASON, SEC.

(Continued from page 742.)

#### DISCUSSION OF DISEASES OF BEES AND THEIR CURES.

Prof. C. P. Gillette—I have with me two small microscopes and lenses. I will be glad to place them on the table and let any of you examine these larvae. Dr. Howard says they can be examined with small lenses. I will put them on the table during the intermission, and you may examine them.

Pres. Root—This question is open for discussion. I would like to hear from Prof. Gillette in regard to pickled brood in Colorado.

Prof. Gillette—I have made no special study of the pickled brood in Colorado. We have in the northern part of the State, I think at least quite generally over the State, what is considered there as pickled brood. The larvae will lie in the cells, and usually surrounded by a considerable amount of food. The larva itself is in a wet, soggy condition, usually somewhat discolored, of a brownish color, and can be removed with a toothpick or a pin, and you can still detect the shape of the larva and the pupa, and in some cases I have noticed the adult bee, or the bee apparently ready to emerge from the cell, but still dead in the cell, and apparently from the same cause—wet, soggy, and dead—evidently not foul brood.

Mr. Green—to what extent is pickled brood contagious?

Prof. Gillette—I don't think any one knows; in fact, I am not sure it is known that it is positively contagious, tho it probably is. I believe the cause of pickled brood is not known at present any farther than what Dr. Howard has told us. It is probably due to bacteria of some sort.

Mr. Green—Have you known it to damage colonies to any great extent as honey-producers?

Prof. Gillette—I think so in some cases, but not in very many; I have heard of two reports of the disease where it was large enough to decrease the number of colonies quite badly, so that the colonies would not amount to much. At Ft. Collins I have noticed the disease for four or five years, but only a small number of colonies were affected; I never had a case bad enough to injure the colonies perceptibly. Usually only a few cells in a colony were affected—I could find ten or a dozen, perhaps 15 or 20 of these dead larvae when the disease was the worst, but this occurred within a short period of time. Mr. Aikin is present, and could give some information in regard to that.

Mr. Aikin—I can't give any information further than has already been given. There is some disease existing among our bees, and has been for a number of years—I think six or eight years; what it is I never knew, and, as to the extent of it, I never had it to appear sufficiently in any one colony to make any perceptible difference in the strength of the colony, or affect it any way, further than that there was scattering dead brood. It comes and goes; as to the cause of it any further, in a scientific way, I can't give you any information whatever.

Mr. Hatch—Perhaps I can offer something in a practical way. I don't know anything about it scientifically, but I found this pickled brood in California, and so bad in some instances that the colonies were entirely worthless the whole season.

Dr. Mason—When was that?

Mr. Hatch—That was three years ago. Then I came to Colorado and bought out two apiaries. I found it there, and I found the colonies were completely worthless the whole season. When I came to Wisconsin I bought out four apiaries. In three of those I found the same pickled brood, and I have had this season colonies that were completely worthless—good for nothing on account of it. I think it is almost worthless where you find bees with pickled brood. I never found any kind of disease in Arizona bees, and I think for lack of observation is one reason,

when they think they haven't got it. I think there are very few apiaries in Wisconsin but what have it more or less.

S. W. Snyder—I would like to ask if a prevailing notion does not exist among bee-keepers that this pickled brood will finally develop, thru a series of developments, into foul brood?

Pres. Root—if you are asking the chairman that question, I would say that it is somewhat of a prevailing notion that pickled brood continuing to develop would develop into foul brood. The most I can say is that it would only be a favorable medium for foul brood; pickled brood would not very well turn into foul brood. Am I correct, Prof. Gillette? This gentleman here wants to know whether one disease would turn into another. The question was asked whether pickled brood, after a series of developments, would finally develop into foul brood. Prof. Gillette does not know what I have said, so I will see what he says without any prejudice.

Prof. Gillette—We might have to know a little more about pickled brood before we could positively answer that, but it is practically certain that the pickled brood can not be any stage of foul brood. Any disease that is caused by disease-germs produces a peculiar disease; you can't get from that disease-germ some other disease any more than you can plant one kind of seed and get another kind of crop. Certain diseases work in a certain way upon plants and animals, and produce certain results, always the same. The cause of pickled brood not being certainly known, might be noticed in a certain locality, might take a certain form which we call "pickled brood;" in that case we would occasionally find foul brood developing from it; it is practically certain that one isn't related in any way to the other.

Mr. France—I agree with the professor in my experiments in that respect; my observation now is for four years in our State, that pickled brood need not develop into foul brood. It may form the proper medium, but so far as my observation goes pickled brood would be a way to develop foul brood. I think they are independent.

Pres. Root—Dr. Mason has asked me how I am to tell if they agreed with me; all right enough.

Dr. Mason—That doesn't agree with what you said awhile ago.

Pres. Root—I said it might be a favorable medium for it; but it would not develop into foul brood, as I understand it.

Mr. Snyder—I would like to ask another question. In case a colony has been slightly affected this year with pickled brood is it likely to follow up next year in a more serious form, having disappeared this year?

Pres. Root—I would like to pass that on to some one who has had more experience—Mr. France or Mr. Lathrop.

H. Lathrop—Several years ago I had several colonies in northern Wisconsin that were so badly affected with pickled brood when I first saw it that I was scared, because I was afraid of foul brood. I markt those colonies, and went so far as to burn up one frame of brood and honey; but the disease disappeared towards fall, and did not appear the next year in those colonies that I had markt on account of being the worst affected with pickled brood; but I can always find, every year, a few cells somewhere in the apary of what I understand now to be pickled brood.

Dr. Mason—What is the cause of pickled brood?

Pres. Root—Lack of pollen is one thing, I think Dr. Howard says. I don't know what the other causes are; perhaps Prof. Gillette will tell us.

Prof. Gillette—I don't know the cause. I think Dr. Howard has been working on a certain cause of pickled brood, and I believe he stated in the paper he did not yet know certainly the cause. It seems to work like a bacterial disease, and still he has not been able to isolate the particular germ that will cause the disease; so as yet we are in the dark, as I understand it, as to what the real cause is. It has been thought to be caused by chilling of the brood, but I think that has been disproved, from the fact that it will disappear when there has been no opportunity for chilling of the brood. It seems like a disease caused by a disease-germ, and that that germ has not been found.

David Coggshall—I don't know anything about it. I have never seen a case.

Dr. Mason—Of pickled brood?

David Coggshall—Not that I ever thought was such a thing, in my apiaries.

Mr. Aikin—You were speaking of the lack of pollen being probably the cause, or having something to do with the disease. I will make this statement in regard to the matter, that I have been reading in the papers in regard to the famine districts in the East, that the famine itself was not

the worst result; that the consequences that followed the famine were of far greater concern than was the famine itself, and one of the particular reasons is this, that the famine produces such a weakened or enervated condition of the system that diseases are likely to follow and attack the individual. Now, coming more directly to our subject, Mr. W. L. Hawley, of Ft. Collins, with whom Prof. Gillette is well acquainted, I suppose—they are both in the same town—Mr. Hawley claims to have discovered the cause of pickled brood. He has a dead brood that has afflicted his bees the worst of any I have known in the State, and I suppose it is this same disease that we are talking about. I say I suppose, for I don't know. Mr. Hawley said that he came to the conclusion that it was a lack of pollen, and when he was examining his colonies he took special pains to notice whether the colonies being diseased had pollen in the hives, and he found those that were the worst diseased had the least amount, some having none to be found whatever. Well, now, it is a fact that in our locality there is a dearth of pollen, usually at all seasons of the year in my locality, which is 14 miles from the Agricultural College where Prof. Gillette is, and 15 miles from Mr. Hawley's apiary. In my locality the bees will search for pollen at all times of the year, except during a fine honey-flow, and when the honey is being gathered during a flow there is no pollen whatever gathered, except occasionally a bee will get a little, which the bees seem to need, absolutely need, in their building operations. I might incidentally mention that of course that condition favors us, that we never have pollen in the sections or surplus honey under all normal conditions. Now, Mr. Hawley undertook a method of curing this disease in his bees, and he said it was so bad that almost the entire brood of some colonies was dead, and the procedure was this: He took combs—brood-combs, right from the brood-nest, but not having brood in them—and took common flour and filled the cells of from one to two combs, placing those combs one on either side of the brood-nest, and he assures me that just as quickly after putting that in as the bees could mature what brood they had, or clear out what brood was dead, that thereafter there was no more of the disease, and he was so confident that he was on the right track that he has practiced now for two seasons feeding flour at that time of year. It usually gives most trouble about June and July, and he says he has no more trouble with it. Now, here in this room yesterday I examined the comb that was badly affected, I would say badly, with some disease, some dead brood, I don't know what it was, but it looks just like what we have in Colorado, and I mention this matter of the lack of pollen; and on examination of this comb I find there is pollen in it; but the question will arise, Was that pollen there when the disease entered and killed that brood, or has it been stored in that comb since? It is evident to every one of you that the presence of pollen in that comb does not in any sense prove that the brood died for lack of pollen, or otherwise, because, as I say, the pollen may have been placed in that comb after the disease entered the brood, so we don't know. This is one of the points—one of the places—in which we are so liable to make a slip in our observations, and it is very hard for us to say that a certain thing is so, that a disease is caused by certain conditions, unless we have put it thru a very severe and accurate test, such as they are capable of doing at our agricultural colleges and experiment stations. You all know how that comes about, that people will tell you that they have found out for certain what will accomplish this and that in our apicultural affairs, and they come out in the papers with an article and tell what they have discovered; and the next year, or, may be, before the next year commences, they find they have made a mistake, and hear no more from them. Now, I don't want you to go out and say that this disease is caused by lack of pollen, from what I have told you of Mr. W. L. Hawley's observations. It is possible, after all, he is mistaken; that the disease exists all over the country more or less, east, west, north and south, and in localities where they evidently have pollen at all times in the hive or available in the fields, seems to me to be proof that Mr. Hawley may be mistaken. The thought is worth considering, and we should look into it, but we should not yet jump to the conclusion that we have the cure, or the cause, of pickled brood in the absence of pollen. Now, from a scientific point, and from a practical point, this is all I know about the matter. I have intended to follow Mr. Hawley's methods, and make some closer observations. I intended to do so during the past season, but a man who is as busy as I am, and has to make his living from his business, can not accomplish these things in definite form so that we really know, and

can say absolutely that we do, or do not, know the cause; and it is a matter for experiment stations to take up and go into the details in a thoro and scientific manner. It should be the duty of every one of us who is in touch with these experiment stations to aid in every way we can in getting at the right in these matters.

Pres. Root—I would say that in my private correspondence I run across quite a number of letters wherein the suggestion is made of the lack of pollen as the cause of this disease. I did not know that Mr. Hawley had ever thought that the lack of pollen had ever been instrumental in starting pickled brood, and I know that quite a number have said something to that effect, and there may be something in it.

Mr. Hatch—I am not anxious to prolong this discussion, but I am loth to have the convention go on record as assigning the lack of pollen as the cause of pickled brood, because I am quite positive there are cases in Wisconsin that are not due to lack of pollen, as there is no lack of pollen from the time willows bloom until the honey season closes. I am sure that all the cases that have come under my observation in Wisconsin are not from lack of pollen. I think the case stated by Mr. Aikin doesn't necessarily prove the lack of pollen. It would seem to indicate to my mind that it came from the pollen, and not from the lack of pollen.

Pres. Root—Of course that is a matter to be determined by the experiment stations. I hope the one at Ft. Collins may be able in time to take hold of that, as it is in that immediate vicinity. We must not spend too much time on it. I thought some of the convention would like to know some of the symptoms from the bee-keepers' standpoint, of pickled brood, foul brood and black brood. I haven't a microscope; you will have to depend upon what I can see with my naked eye. Foul brood has for its principal symptom the ropiness of the dead matter; it has a sort of coffee color, or yellow color, and it also has a foul odor, something like an ordinary glue-pot, such as we see at the cabinet-maker's shop with poor glue in it. Pickled brood sometimes has a sour smell. Black brood will not have that sour smell. Pickled brood and black brood look very much alike, and I think in many cases, and perhaps a majority of them, it would take a microscope to determine the difference; but pickled brood, after it has advanced to a certain stage, if taken away from the bees and left for a week or ten days, will be apt to show a kind of white mold, something as tho cotton-battening had been drawn over the surface of it. Black brood never has that. Pickled brood sometimes will have a sour pickle smell to it. Black brood always has it so far as I know, very strongly. The color of pickled brood and black brood I describe together, because they are alike; the color of the dead larva is generally white at the first stage of the disease, and sometimes the pupa itself is white. In the more advanced stages we find it turning to a coffee color like foul brood, and then we will find, if it is black brood, a cell—perhaps a very few of them—that will "rope" very slightly, perhaps  $\frac{1}{8}$  to  $\frac{1}{4}$  inch, but you will find, I should think, only three or four of such cells in a good comb. In the case of foul brood, if you find one cell that is ropy, you will be likely to find other cells ropy; but that isn't true of black brood. In pickled brood I think we never find a ropy cell. From a layman's standpoint—for any one who is not a scientific bee-keeper, and does not have at his command a microscope—I think these are the only symptoms which we can give by which we can diagnose these various diseases.

Pres. Root—We will now listen to the paper by Mr. Thomas Wm. Cowan, editor of the British Bee Journal. Mr. Cowan is now living in California. Dr. Mason will read the paper.

#### CHEMISTRY OF HONEY, AND HOW TO DETECT ITS ADULTERATION.

It is not at all unusual to hear people speak about bees gathering honey from flowers, or mentioning various plants as "honey-producing plants." Even in botanical text-books we read about "nectaries" or "honey-glands" in flowers. These terms are certainly not correct, because honey is essentially a product of the bee, and not of the flower which the insect visits. The sweet secretion which the bee gathers from the flower is called *nectar*, and consists almost entirely of cane-sugar. But after it has been collected by the bee, and before it is stored in the cells of the comb, it undergoes a change, and the cane-sugar is transformed into two other sugars called respectively grape-sugar and fruit-sugar. This transformation is brought about thru the action of a secretion produced by glands

situated in the head of the bee, and is similar in operation to saliva in the human being.

In order to have a right understanding of the subject, we will briefly glance at the way in which the sugar composing nectar is produced in the plant.

There is an important group of compounds which form the largest part of the body of all plants. These contain carbon, hydrogen and oxygen, and the elements of hydrogen and oxygen being present in the same proportion as they exist in water, the name of *Carbohydrates* has been given to them.

When light shines on a green leaf and stimulates it into activity, the leaf absorbs, principally thru its stomata or pores, carbon dioxide (also called carbonic-acid gas) from the air. After entering into the cells of the leaf, the carbon dioxide, together with a certain proportion of water, undergoes chemical changes, the carbon of the carbon dioxide becoming fixed, and a rapid accumulation of carbohydrates takes place in the tissues of the plants, the oxygen escaping into the air.

The most important of these carbohydrates is starch, which, thus formed, at first deposits in the leaf-cell in which it took its origin. From it a number of other vegetable products take their rise, which constitutes the greater proportion of all plant structures. In order that this may be done, the starch once formed must be carried about by the sap of the plant into every cell, whether of the root or flower. As each cell is a delicate membranous bag closed in itself, a solid matter—such as starch would be, owing to its insolubility in cold water—can not be removed from the tissues in which it is stored to the centers of growth where it is needed, but must be digested or transformed into a soluble easily diffusible substance. The solution is effected by the chemical activity of an enzyme, or unorganized ferment, which is secreted by the protoplasm in the plant. This ferment is called *Diastase*, and it is owing to its presence in active plant-juices, that the starch is dissolved. The solution thus obtained is devoid of starch, has become sticky and sweet, and contains a substance called Dextrine, and a variety of sugar named Maltose.

From the solution every minute cell abstracts a portion of the sugar and deposits it in the form of *cellulose*. This is the framework or woody fibre of every plant. It has chemically exactly the same composition as starch. Another portion of the dissolved starch is changed by the plant into *cane-sugar*. All plants form more or less cane-sugar, and secrete it by an apparatus called a nectary, which is generally connected with every flower, altho in many plants nectaries exist in other parts, perhaps quite distant from the blossom, and these are called extra-floral nectaries. This secretion, properly called *nectar*, is what bees gather, and it consists almost entirely of cane-sugar, to which the sweetness of most flowers is chiefly due. The bee appropriates this cane-sugar, and by means of the glands already mentioned, transforms it into two other sugars called respectively *dextrose* and *levulose*.

According to their composition sugars fall into three groups. These are:

1. The *glucose group*. The principal members of this group are dextrose or grape-sugar, levulose or fruit-sugar, and galactose.

2. The *cane-sugar group*. The principal members are cane-sugar, sugar of milk, and maltose.

3. The *cellulose group*. The principal members are cellulose, starch, gum, and dextrine.

As much confusion exists in the lay mind respecting the various terms used by the chemist in describing sugars, and as each of the above groups contains different sugars, altho of the same chemical composition, it is well to explain the meaning of those terms with which we have to deal, so that the uninitiated may understand just what the chemist means by the words he uses.

Dextro-glucose, glucose, and grape-sugar, are synonymous, and are frequently used to designate dextrose.

Levo-glucose, fruit-sugar and fructose, are other names for levulose.

In like manner saccharose, sucrose, and cane-sugar, signify the same thing.

When the chemist speaks of sugar he may allude to any of the sugars in groups 1 or 2, and when he uses the term glucose he may mean any glucose of group 1. With those who are not chemists it is different; they understand by glucose, commercial glucose which is dextrose only, and by sugar ordinary cane-sugar such as they use daily in their households. Now, altho, from a chemist's point of view honey is glucose, to call it so puzzles an ordinary person, because he at once, and quite naturally, associates it with

commercial glucose or dextrose, from which honey materially differs in that it consists of both dextrose and levulose.

Honey consists of water and sugars belonging to the first group. The quantity of water varies from 12 to 23 percent, the normal proportion being 18 to 21 percent. When the percentage falls below 18 the honey is generally hard and solid; when it is higher than 21 it is often almost or quite clear, but the clearness does not always depend upon the amount of water alone.

Normal honey almost invariably divides into two portions, a crystalline, solid one, and a syrupy one devoid of the power of crystallizing, and rather sweeter than the solid portion. Chemically these two dissimilar substances are identical in composition, and both belong to the glucose group of sugars, but physically they possess very widely different properties. If a polariscope be used it would be found that the crystalline portion twists a ray of polarized light to the right, and is therefore called *dextrose*; the non-crystalline portion however turns the polarized ray to the left, and for this reason it is called *levulose*.

The great bulk of honey is composed of these two sugars in about equal proportions. It is kept in solution or liquid by about one-fifth of its weight of water, which, however, is not quite sufficient to keep one of the sugars—dextrose—permanently in solution, and gradually this separates in the crystalline form, holding the liquid levulose in suspension, and we have what is known as candied or granulated honey. The proportion of water in the honey is not a merely accidental one. Were more than one-fifth part of water present, it would be so fluid as to cause the honey to run out of the comb. Were it smaller than that stated, it would in damp weather attract moisture from the air. It remains transparent in the comb for a considerable length of time, because it neither loses nor appreciably attracts moisture.

Genuine honey almost invariably becomes opaque, or granulates, altho there are rare exceptions. When it happens that before the honey is extracted some of the crystals of dextrose remain attached to the cells, levulose predominates, and the honey remains clear for a long time, notwithstanding that the proportion of water may be very low.

All the saccharine substances in the different groups mentioned act upon polarized light, turning it more or less to the right, except levulose, which, as I have already stated, turns the ray to the left.

When treated with acids they undergo a remarkable change—they are all transformed more or less completely into dextrose, with the exception of cane-sugar, which yields both dextrose and levulose.

The rotation of the polarized ray, to the left of levulose is greater than the rotation of the same quantity of dextrose is to the right. Therefore, when mixed together, as they are in honey, the polarized ray is twisted to the left side. All other sugars turning to the right, it is clear that whatever saccharine admixture is made to the honey, the mixture must polarize to the right, thus possessing perfectly distinct optical properties, distinguishing it from genuine honey.

But the bee carries with it from the flowers other constituents of considerable importance, and incorporates them in the honey. A great number of pollen-grains find their way into the cells, and from these minute quantities of coloring-matter are dissolved, which give honeys from different flowers the innumerable shades of yellow and brown with which we are so familiar. Thus, honey produced from white clover is devoid of color, that from sainfoin is yellow, from beans brown, and from heaths quite dark. Honey always contains more or less pollen, and with the microscope an expert can frequently tell from the shape of the various pollen-grains, the sources from which the honey was derived.

Still greater is the variety of flavors and odors, and every conceivable aroma due to the essential oils, is met with, so that a practiced observer can, without much difficulty, decide from what kind of blossom the nectar was obtained from which the honey was produced.

Having briefly stated the characteristics of genuine honey, I will endeavor to show how when adulterated the adulteration can be detected.

There are three classes of manufactured honey: First, that made from ordinary sugar, consisting of cane-sugar syrup; second, that obtained by the action of an acid or ferment upon cane-sugar, and consisting as genuine honey does, of water, dextrose and levulose; and, third, the product of the action of acid on starch, called corn syrup or commercial glucose.

A solution of pure honey in water when boiled with an alkaline solution of sulphate of copper deposits a precipitate of red cuprous oxide. Neither by the addition of alcohol nor of lead acetate, nor of barium chloride, should a solution of honey be rendered perceptibly turbid. Subjected to fermentation by the addition of yeast, practically the whole of the saccharine material should be decomposed and transformed into alcohol and carbon dioxide. And lastly examined by the polariscope the polarized ray should turn to the left. Some honeys, such as those produced from nectar gathered from extra-floral nectaries, polarize to the right, but if further subjected to dialysis for a certain length of time, the ray turns from right to left back to zero.

Cane-sugar syrup, altho it agrees in its chemical behavior with real honey, when treated with alcohol, lead acetate or barium, not yielding any precipitates with them, differs essentially from it inasmuch as it does not reduce an alkaline solution of copper sulphate, consequently no deposit of red cuprous oxide takes place. A solution of cane-sugar turns the polarized ray of light to the right.

Cane-sugar which has been made into dextrose and levulose by treatment with an acid, is chemically identical with honey, and exhibits the same characters, but its origin is betrayed by the traces of acid which always remain mixt with it, and which cause precipitates with lead or barium solutions.

Starch or corn syrup, known commercially as glucose, differs in almost every respect from honey. It throws down abundant precipitates with lead and barium solutions, and often with alcohol. It does not ferment completely, but leaves about one-fifth of its weight as unfermentable gummy residue, and, examined by the polariscope, it turns the ray of light powerfully to the right.

Glucose is prepared on a large scale from corn-starch. The transformation is usually effected by boiling with dilute sulphuric acid. The excess of acid is removed by treating the solutions with chalk and filtering. The filtered solutions are evaporated to a syrupy consistency, and sent into the market under the names of glucose, corn syrup; or to dryness, the solid product being known in commerce as "grape-sugar." Much of the granulated sugar of commerce is adulterated with glucose.

If in the treatment of starch with sulphuric acid the transformation is not complete, and this is usually the case, the product is a mixture of dextrose, maltose, and dextrin. It is quite easy generally to recognize the acid which has been used to convert starch into glucose. In the laboratory it is quite possible to make pure glucose and remove every trace of acid, but commercially it is practically impossible by subsequent precipitation of the product to get rid of this acid, and as a consequence it appears in the honey which is adulterated with it, and by adding to a clear solution of honey containing such glucose a solution of barium chloride, a white turbidity at once makes its appearance varying in density with the quality of corn syrup present and the state of its purity.

The exact percentage of glucose added to honey can be determined by the polariscope. I use a Soleil-Duboscq instrument with a tube 200 millimetres long, and Dr. Haenle's formula, which is the following:

$$x = \frac{(P+p)x3}{10}$$

for flower honey, x=percentage of adulteration, P=polarization of honey that is being examined, p=normal polarization of pure honey. The normal polarization of honey being 30 degrees, it follows that if we find a honey that shows say 44 degrees of polarization to the right, according to this formula, we have

$$\frac{(44+30)x3}{10} = 22.2 \text{ percent}$$

of corn syrup added. In this way it is quite easy to determine whether a sample is adulterated with glucose, and the amount of the adulteration.

Cellulose has chemically exactly the same composition both qualitatively and quantitatively as starch, and, like it, can be transformed into glucose by the action of sulphuric acid. It will, therefore, be seen that substances containing cellulose, such as old cotton and linen rags, paper or wood, could be used for the preparation of dextrose or glucose, did not the low price of starch render the employment of cellulose for the preparation of this kind of sugar unprofitable.

When bees have been fed with cane-sugar syrup, only part of this is transformed into dextrose and levulose, so

that it is easy to detect the presence of cane-sugar in the way I have pointed out before, when this method of fraud had been adopted.

Chemistry has made enormous strides during recent years, but so far only chemical compounds of comparative simplicity have been the result, and not in any case has any complex product, such as is used for man's food, been obtained. The value of food substances, and above all their price, generally stands in no relation to their composition. Composition, as ascertained by chemical analysis, goes for very little; *quality*, which is dependent upon circumstances beyond the present knowledge of the chemist, goes for a great deal. For instance, a pound of tea has chemically no more value than a pound of plum or willow leaves, but who would pay the price for these that tea is really worth? Wine consists of dilute alcohol, slightly acid, and more or less colored, but chemistry has failed to produce from these ingredients anything resembling the high-class wines which command such enormous prices. Sawdust is chemically the same, both qualitatively and quantitatively, as corn flour, but one would not care to have the former substituted for the latter at the same price. We would resent our butcher giving us leather instead of meat, altho the composition of these is chemically almost identical. I might extend this comparison indefinitely, for it is the same with almost every article of food or luxury. The difference between good and bad tea, or wine, or meat, is so small that the most careful analysis fails to detect it. The value, therefore, is not a question of the composition of the article, but is regulated by the presence or absence of minute quantities of flavoring-matters about which we know very little or nothing at all.

We prize honey not because it consists, as the chemist would say, of sugar and water, but because it possesses a delicate aroma and flavor which is always absent from, and can not by any known means at present be imparted to, any artificially made syrup. Glucose, and even cane-sugar that has been given to bees to store in the combs, are totally devoid of the aroma of honey, so that when these are substituted for honey the fraud can be easily detected.

The taste of the public has not yet been sufficiently educated, and any syrup is eaten as honey provided it looks transparent, and is contained in a neat jar and has a gaudy label. When the taste is as well educated for honey as it is for tea, meat or other articles of every-day consumption, no one would venture to palm off artificial syrup for real honey.

It is difficult to decide whether the food-value of the substitute is as good as that of the original article. Sugar in any form produces the same proportion of heat. Oleomargarine, when burnt or digested, produces the same amount of heat as butter. Yet butter holds its own against its substitutes on account of its delicacy of flavor and more ready digestibility. And we have reason for believing that a similar difference exists between honey and glucose. We know that bees refuse, as long as they are able, to feed upon glucose, and when driven by starvation to take it they soon die. The probable reason for its deleterious effect is that levulose, one of the constituents of honey, is absent, and that the glucose of commerce contains impurities. At any rate any chemist caring for his reputation would pause before giving a definite opinion as to the relative food-values of the two products.

Moreover, we know that dextrose is the sugar found in the urine in cases of diabetes, often to the extent of 8 to 10 percent, and also that levulose is a purgative, which probably counteracts any evil influence dextrose may have if taken alone. Thus we have very good grounds for considering glucose deleterious, while the combination of dextrose and levulose in the form of honey as a healthy food. Experience has shown that honey can frequently be eaten by those who can not take sugar. The reason is, that when cane-sugar is taken, before it can be assimilated it has to be transformed into the two sugars that compose honey. Should the digestion be faulty, and the transformation not be complete, some of the cane-sugar enters the circulation and acts as a poison in the blood. Honey is already cane-sugar perfectly transformed, and is therefore ready to be assimilated without any previous digestion. For this reason pure honey is to be recommended for children and persons of weak digestion.

I will not enter into the question of whether the substitutes for honey should be allowed to be sold. If they are *per se*, not considered harmful, they should at any rate, in fairness to the purchaser, be labelled, and their constituents stated on the labels, so that the buyer may know exactly what he is paying for, and I have no doubt that when

the public taste is educated, as it has been in respect to other foods, there will be a demand for good, delicately flavored honey, and glucose sold as a substitute for it will be a thing of the past.

THOS. WM. COWAN.

Pres. Root—This is a most valuable paper, but it is a little too technical for most of us, I imagine. As our time is spent this morning, I think we would better hurry on with the program. If there is no objection I will do so. Before taking up the balance of the program, I wish to name the committees I was to name yesterday.

THE COMMITTEE ON RESOLUTIONS.—R. L. Taylor, Rev. E. T. Abbott, and O. L. Hershiser.

COMMITTEE ON SCORE CARDS.—N. E. France, W. Z. Hutchinson, F. Wilcox, R. C. Aikin, and O. L. Hershiser.

These committees will be prepared to report the first thing this evening.

(Continued next week.)

## Contributed Articles.

### No. 6.—Interesting Notes on European Travel.

BY C. P. DADANT.

BEFORE I describe my visit at Nyon, it may be well for me to tell the readers how we originally became acquainted with the editor of the *Revue Internationale*. This is a bit of retrospective history on European bee-culture.

When we came to America in 1863, my father, who was then 46 years of age, had for many years kept bees in Europe for pleasure, but had never made a business of bee-keeping. Within two or three years, with the help of the works of Langstroth and Quinby, he ascertained what a great step forward was being made in this country, and he endeavored to give his native land the benefit of what he had learned by sending articles on the movable-frame hives to *L'Apiculteur*, published at Paris, and which was the second oldest periodical publication in the world, the oldest being the *Bienenzitung*. But the editor of *L'Apiculteur*, Mr. H. Hamet, happened to be a man who was satisfied, in his own mind, that no progress could be made in the particular lines that he controlled, and he systematically fought everything new in bee-culture. He called the movable-frame hive a "puppet-show box," and the honey-extractor "a useless toy." He resolutely closed the pages of his magazine against any attempt at introducing progress.

But my father was not to be put off, and began to write articles for the various French agricultural papers. After some seven or eight years of controversy, public opinion began to form, in spite of Hamet, in favor of the American movable-frame hives, and several imitators came to the rescue. It was then that Mr. Bertrand established the magazine now known as the "International Review," and wrote to my father, asking for his collaboration. His request had hardly been mailed when he received a proffer of help from him. The fight for progress was then well established on Swiss soil, and it was not long till American views on bee-culture were generally accepted by French speaking bee-keepers. Even the old *Apiculteur*, after the death of Hamet, was reluctantly compelled to accept the progress accomplished.

Since that time Mr. Bertrand has published one of the most popular books on bee-culture, the "Conduite du Rucher"—the Conduct of the Apiary—which was translated into several languages. He has also been the editor of the French edition of Langstroth. Thus for 22 years past we have been in constant communication with him, and I may truly say that when we found ourselves in his house we felt absolutely "at home."

The Swiss "chalet," which is seen everywhere in Switzerland, from the top of the highest pastures to the foot of the hills, on the lake shores, makes a very pretty picture. Up in the mountains, the coarse shingles that form those long-eaved roofs, are not only nailed down to the rafters, but they are also covered with large

stones to prevent the high winds, that whirl around the peaks, from tearing them off.

The mountain chalet is used not only as a dwelling for the herdsmen, but as a milk-house, and in many cases as a shelter for the cattle during the storms. The chalets on the lake shores are, on the contrary, very ornamental villas, with all the comforts of civilization. The view given here is of the one inhabited by Mr. Bertrand, and, tho very attractive, is not to be compared with the view obtained from the windows of that same house. Imagine yourself looking out on a pretty park adorned with flower-beds, running streams of clear water, two small ponds with water-lilies of different colors, small groves of trees on either side; beyond the blue waters of the lake, three miles wide, a number of villages scattered on the far-away hills, an amphitheater of mountains in the rear, and, still further back, 60 miles away, but seemingly close at hand, the snowy summit of Mont Blanc, white in the morning, pink at sunset, and of a bluish shade at dusk. Walking thru this little park you discover, in a remote corner on the right, a couple dozen hives of bees, hidden among the trees, and a small bee-house with the usual implements of the experimenting apiarist. On the left is a small river emptying into the lake, with a nice little row-boat harbored in its mouth.

In that little park Mr. Bertrand has gathered together a wonderful collection of foreign plants and trees, especially, of course, honey-producers. Here I saw an old acquaintance, the Chapman honey-plant (*Echinops sphaerocephalus*), which made such a stir among our bee-men at one time. Mr. B. narrated to me his experience with that plant. He had noted its attractiveness for the bees long before we did on this side of the Atlantic, and had cultivated it extensively enough to ascertain that its value to the bee-keeper was only apparent. When the demand began for it in America, Mr. D. A. Jones, of Canada, offered \$5.00 per ounce for the seed. Upon this, Mr. B. harvested some four pounds of it and sent it to Mr. Jones with his compliments. Mr. Bertrand says that a number of plants have, like this, a great attraction for the bee that are not honey-yielders.

He showed me another, the *Eryngium giganteum*, on which the bees are forever working while it blooms, but without results. This was tested by marking some of the bees with flour. The same bee was seen to work about the same bunch of these flowers for five consecutive hours without any apparent result. He nicknamed the plant, "The-bar-room of the honey-bee," because the more they sip the drier they are. Luckily it does not make them tipsy, but wears them out, which is nearly as bad. There are probably a number of plants which ought to be placed in the same category, plants whose fragrance evidently attracts them without furnishing any returns for their pains, except, perhaps, the pleasure of sipping an infinitesimal drop of nectar, which serves only to keep them at work trying for more. Perhaps there are times or locations when the honey-yield of these plants is greater. One thing is very evident, the same blossoms do not furnish honey in like quantity in different countries, tho it may be ever so common. For instance, the white clover, which is one of our best crops, is of no value in Switzerland, if I believe the authority of the most practical apiarists there, including Mr. Bertrand himself, who has had several hundred colonies in different apiaries and at different altitudes. He



*The Chalet or Home of Mr. Bertrand.*

now keeps only about 80 in two apiaries, owing to his ill-health, and devotes most of his time to his journal, with the help of his kind wife, who has bent her energies to the task of devotion to her husband.

The curiosities of this little park are not confined to bee-plants, for I saw there many sorts of exotic plants, or trees, from the cedar of Lebanon to the bamboo of our southern countries, which seems to thrive in the climate of Lake Geneva. As one instance of Mr. Bertrand's love of observation, I will say that he showed me a record of his remarks on the growth of the latter, which we all know is very rapid, and if I remember rightly, the fastest growth in warm weather was as much as an inch in the space of an hour. On the other hand, I saw an American tree—a blue ash, I believe—that seemed like a homesick exile, stunted and suffering as if in want of nutrition.

Two days after our arrival we took an excursion on the lake, to visit the home and the apiary, of a bee-keeper who had formerly been in the employ of our host as landscape gardener, but who had saved enough to be independent, and was keeping bees and growing grapes on a very pretty little farm on the lake shore. We were received, as in every other place that we visited, with the utmost cordiality, but with a little of the excess of hospitality so common among the working classes and the peasants of Europe. You must eat, you must drink, and it serves nothing to say that you have just had your dinner, that you are neither hungry nor thirsty, for you will be given no peace—in fact, you will almost offend those naive people if you do not accept what they consider themselves in duty bound to offer you. It is hospitality carried to extremes.

## Questions and Answers.

CONDUCTED BY

**DR. C. C. MILLER, Marengo, Ill.**

[The Questions may be mailed to the Bee Journal office, or to Dr. Miller direct, when he will answer them here. Please do not ask the Doctor to send answers by mail.—EDITOR.]

### Cellars for Wintering Bees.

In answer to Daniel Whitmer's question, on page 711, I may say that one summer I was at Adam Grimm's place, and he showed me a cellar that he had just built, specially intended for bees, having a cement floor. The next time I was there he told me it was not a success, and he thought the cement floor was objectionable. The cellar under my own house was divided into 3 rooms, one of them intended for bees, having a cement floor. It did not seem to work satisfactorily, and for years the bees have been cellared in the rooms with clay floor. Mr. Whitmer wants the cement floor for convenience in sweeping up dead bees. He might take Mr. Doolittle's plan and put half an inch of sawdust on the cellar bottom, which would make it easier to sweep up the bees.

### Caging the Queen to Keep Down Increase.

To keep down increase I would like to try the plan of caging the queen. I use the 10-frame Simplicity-Root hive.

1. What style and most convenient cage should be used?
2. In what part of hive (or brood-chamber) and in what manner, should the caged queen be placed?
3. I presume the swarm is returned, and queen-cells cut out then; and also cut out again 5 days afterward; and finally, in 5 more days, again destroyed and the queen released?
4. In case swarming has been delayed, and a young queen should have emerged, when the swarm issued, should said young queen be destroyed, or taken away?

OREGON.

ANSWERS.—1. When I followed the plan of management I learned from Mr. Doolittle, I used a very simple little cage of my own devising, which cost less than a cent for material and was easily made. Take a pine block 5x1x½ inch, and wrap around it a piece of wire-cloth 4 inches square. The wire-cloth is allowed to project at one end of the block a half inch. The four sides of this projecting end are bent down upon the end of the stick and hammered down tight

in place. A piece of fine wire about 10 inches long is wrapped around the wire-cloth, about an inch from the open end, which will be about the middle of the stick, and the ends of the wire twisted together. Then pull out the block, trim off the corners of the end a little so that it will easily enter the cage, slide the stick in and out of the cage a number of times so that it will work easily, and the thing is complete. When not in use the block is pushed clear in, so as to preserve the shape of the cage. Such cages can be carried in the pocket without danger of being injured.

2. The best place is between two combs in the brood-nest. It is more convenient, however, for the first 5 days, to put the caged queen in at the entrance, far enough in so there will be no danger of the bees deserting her if a cool night should come.

3. No, no attention was paid to queen-cells till 5 days ensued, then they were cut out, and 5 days later, (10 days after the issuing of the swarm) the cells were again cut out and the queen liberated.

4. I never had a case of the kind. Unless the old queen were especially valued it might be better to leave the young queen.

### Feeding Bees in Winter.

When I come to put my bees into the cellar I find, by weighing them, some are too light to winter. I have 80 colonies, and about 20 will need feeding. How can I best feed them in the cellar? The light ones are all on top, so I can get at them easily. I have a few frames of honey, also some frames of hard candy that I have prepared. Can I give them these, or would I better give sugar syrup? How would I better feed them, and when? Now, or wait till toward spring? I would prefer doing it now if it is just as well.

WISCONSIN.

ANSWER.—Don't feed syrup in winter. Use the combs of honey and the candy. It is just as well if not better to feed right away. Very quietly remove the outside comb or combs at one side, so that you can put the frame of honey or candy right next to the bees. The bees will do the rest. Of course you will not use any smoke. If your work is carefully done you will have no trouble.

### When to Put Bees Into the Cellar.

Is this a good time to put bees into the cellar? They had a good flight Nov. 5. NORTHERN ILLINOIS.

ANSWER.—I don't know, and I'd give a good deal to find the man that does know. My bees had a flight the same time as yours, and the right thing was to put them into the cellar Nov. 6, if Nov. 5 is to be the last day they can fly. If, however, they have a chance to fly again within the next 6 weeks, they're better off to stay out till then. The trouble is that no one can be certain about it. I think mine will stay out till late in November if they do not have a chance to fly before then, and if they are put in then without a chance to fly, I shall wish very much that they had been put in early in the month. But it is a very unusual thing that bees do not have a chance to fly later than Nov. 5, only happening once, I think, in a great many years.

### Getting Extra-Large Colonies by Artificial Heat.

Is it practicable or desirable in forming extra-large colonies, to use artificial heat on the outside of the bottom and back of the brood-chamber (those parts of the brood-chamber being a single board, the rest being double and filled)? If so, within what limits, it being understood that the heat is to be uniform?

CALIFORNIA.

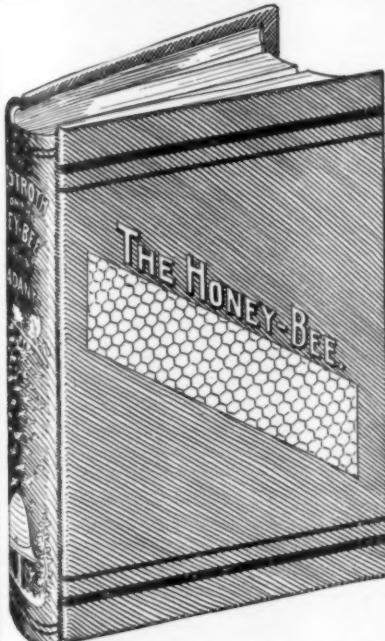
ANSWER.—I doubt the advisability of anything of the kind. At one time Mr. A. I. Root was most enthusiastic about advancing a colony in spring by means of artificial heat, and he made a sort of hotbed about it. If I remember correctly, the colony petered out—at any rate, the proceeding was a damage to the colony.

Please send us Names of Bee-Keepers who do not now get the American Bee Journal, and we will send them sample copies. Then you can very likely afterward get their subscriptions, for which work we offer valuable premiums in nearly every number of this journal. You can aid much by sending in the names and addresses when writing us on other matters.

# Langstroth on... The Honey-Bee

Revised by Dadant—1899 Edition.

This is one of the standard books on bee-culture, and ought to be in the library of every bee-keeper. It is bound substantially in cloth, and contains over 500 pages, being revised by those large, practical bee-keepers, so well-known to all the readers of the Ameri-



can Bee Journal—Chas. Dadant & Son. Each subject is clearly and thoroly explained, so that by following the instructions of this book one cannot fail to be wonderfully helpt on the way to success with bees.

The book we mail for \$1.25, or club it with the American Bee Journal for one year—both for \$1.75; or, we will mail it as a premium for sending us THREE NEW subscribers to the Bee Journal for one year, with \$3.00.

This is a splendid chance to get a grand bee-book for a very little money or work.

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## DITTMER'S FOUNDATION

Wholesale and Retail

This foundation is made by an absolutely non-dipping process, thereby producing a perfectly clear and pliable foundation that retains the odor and color of beeswax, and is free from dirt.

Working wax into foundation for cash, a specialty. Write for samples and prices.

A full line of Supplies at the very lowest prices, and in any quantity. Best quality and prompt shipment. Send for large, illustrated catalog.

**GUS. DITTMER, Augusta, Wis.**  
Beeswax Wanted.

Please mention Bee Journal when writing.

## GENERAL ITEMS

### Cellaring the Bees.

We are having a blizzard and excessive cold weather. We must put our bees into the cellar at once, for if we do not take good care of them we will not have any honey to ship next season. We have 400 colonies in good condition for winter quarters, and if they winter well (as they always do), and with the usual amount of bloom and proper atmospheric conditions, we hope to have a greater amount of honey to sell next year.

ADA L. PICKARD,  
Richland Co., Wis., Nov. 17.

### A Short Report.

Over a year ago I started with one colony which increased to four, but I got no honey. I put the four into winter quarters, but lost two before spring, so I had only two left, which increased to three the past season, and I secured two cases of section honey.

I like the Bee Journal very much.  
H. H. FISHEL.  
Richland Co., Wis., Nov. 12.

### Honey-Can Experience.

I have been a good deal interested in the discussion which has occurred at different times in the American Bee Journal in regard to the best package in which to ship extracted honey. Some favored barrels, and quite a goodly number advocated the use of the 60-pound tin cans, cased in wooden boxes, two cans in a box.

I have shipt a good many tons of ex-

### IT COST US \$4,000 Costs You 15c

We have spent \$4,000 on our new book, "How to Make Honey with Poultry and Incubators," it tells it all. Leading poultry men have written special articles for it. 192 pages, 8x11 in. Illust. It's as good as *Cyphers Incubator*—and it's the best. Get hold any other machine. 16 page circular free, send 15 cts in stamps for \$4.00 book No. 50.

**CYPHERS INCUBATOR CO.**  
Wayland, N. Y. Boston, Mass.

Please mention Bee Journal when writing.

### BEE-SUPPLIES.

Muth's Square Glass Honey-Jars.  
Send for Catalog.

HONEY AND BEESWAX WANTED.  
C. H. W. WEBER,  
4241 Central Ave., Cincinnati, Ohio.  
Please mention Bee Journal when writing.

**Best on Earth**  
What? Our New Champion Winter-Cases. And to introduce them throughout the United States and Canada we will sell them at a liberal discount until Oct. 15, 1900. Send for quotations. We are also headquarters for the No-Drip Shipping-Cases.  
**R. H. SCHMIDT & CO.**  
Sheboygan, Wisconsin.

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### Extracted Honey For Sale!

Case of two cans White Alfalfa, weighing 122 pounds net, for \$8.50, f.o.b.

**H. L. WEEMS, Lemoore, Calif.**

47A4t Please mention the Bee Journal.

DR. PEIRO,

34 Central Music Hall, CHICAGO.

Please mention Bee Journal when writing.

**Be Kind to Stock**  
by humanely dishorning them only with the quick, smooth cutting  
**Convex Dishorner.**  
I also make the Bucket Stock Holder, one of the best aids to dishorning, and two other styles of Dishorners, one for calves. Every approved appliance for this work. Send for FREE book.  
**GEORGE WEBSTER, Box 125, Christiana, Pa.**  
Western trade supplied from Chicago.

Please mention Bee Journal when writing.

## The Emerson Binder

This Emerson stiff-board Binder with cloth back for the American Bee Journal we mail for but 60 cents; or we will send it with the Bee Journal for one year—both for only \$1.40. It is



a fine thing to preserve the copies of the Journal as fast as they are received. If you have this "Emerson" no further binding is necessary.

**GEORGE W. YORK & CO.,**  
118 Michigan Street, CHICAGO, ILL.

### FOR SALE!

### Best Extracted Alfalfa Honey

Guaranteed absolutely Pure Bees' Honey. Packt in 5-gallon tin cans, of about 60 pounds each, two cans to the case, 7½ cents per pound, cash with order. Buy direct from the home of Alfalfa. We can please you. Headquarters for ALFALFA and SWEET CLOVER SEED. Write for prices. Vogeler-Wiedemann Co., 60-62 W. First St., SALT LAKE CITY, UTAH.

43A1f Please mention the Bee Journal.

**Belgian Hare Guide AND DIRECTORY OF BREEDERS.** Price 25c  
Inland Poultry Journal Co., Indianapolis, Ind.

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### FREE FOR A MONTH....

If you are interested in Sheep in any way you cannot afford to be without the best Sheep Paper publish in the United States.

### Wool Markets and Sheep

has a hobby which is the sheep-breeder and his industry, first, foremost and all the time. Are you interested? Write to-day.

**WOOL MARKETS AND SHEEP, CHICAGO, ILL.**

**BEES QUEENS**  
Smokers, Sections, Comb Foundation  
And all Apiarist Supplies  
cheap. Send for  
E. T. FLANAGAN, Belleville, Ill.

Please mention Bee Journal when writing.

Nov. 29, 1891.

**SPECIAL NOTICE !**

Last winter's cut of basswood is the whitest it has been for many seasons. We are now making sections out of this new stock and therefore are in a position to furnish you with the very finest quality in the market.

**LEWIS WHITE-POLISHT SECTIONS**

Are perfect in workmanship and color.

Orders shipt immediately upon receipt. A complete line of everything needed in the apiary. Five different styles of Bee-Hives.

**Lewis Foundation Fastener** simplest and best machine for the purpose. Price, ONE DOLLAR, without Lamp.

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L. C. WOODMAN ..... Grand Rapids, Mich.  
FRED FOULGER & SONS ..... Ogden, Utah.  
E. T. ABBOTT, St. Joseph, Missouri.  
Special Southwestern Agent.

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**26 cents Cash  
paid for Beeswax.**

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**California!** If you care to know of its Fruits, Flowers, Climate or Resources, send for a sample copy of California's Favorite Paper—

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330 Market Street, SAN FRANCISCO, CAL.



200-Egg Incubator for \$12.00

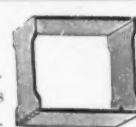
Perfect in construction and action. Hatches every fertile egg. Write for catalogue to-day.  
GEO. H. STAHL, Quincy, Ill.

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**Bee-Hives and Honey-Boxes**

in car lots, wholesale or retail. Now is the time to get prices. We are the people who manufacture strictly first-class goods and sell them at prices that defy competition. Write us to-day.



**Inter-State Box and Manufacturing Company,  
HUDSON, WIS.**

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**Have You Either an Orchard or Garden ?**

Have you anything to do with either Fruits or Vegetables ? Then keep in touch with your work by subscribing for the

**American Fruit and  
Vegetable Journal**

Sample copy free. Mention this paper.

Publish at  
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Temple....  
CHICAGO, ILL.

I have before me a copy of the American Fruit and Vegetable Journal, which I like pretty well. It fills the bill better than any paper I have seen lately. IRA C. TRACY,  
Foreman in the Home Nurseries.

I was much pleased to receive your publication. It is a very neatly printed and well edited journal, and merits success. D. W. BARKLEY,  
Editor of the "Rocky Ford Enterprise."

All departments of the Fruit and Vegetable business discuss by practical and experienced persons.

**FREE!**

We will send the above Journal absolutely FREE for one year as a premium to all old subscribers sending us \$1.00 to pay their subscription one year STRICTLY IN ADVANCE.

Both papers for the price of one. Send your renewal subscription to this office while this offer is open. Both papers, \$1.00.

**AMERICAN BEE JOURNAL, 118 Mich. St., Chicago, Ill.**

**Please mention the Bee Journal when writing  
Advertisers.**

tracted honey during the last 10 years, and have always used barrels, and never had any complaint of leakage. You can judge of my surprise, perhaps, when I opened the box containing two cans of honey which I bought recently, and which I have just received, to find one of the cans had leaked. The cans must have been ruptured soon after being shipt, as there was a layer of honey on the bottom and some on two sides of the can that was candied quite thick, and what remained in the box was in the same condition. The top of the can is torn from the side where it was soldered, and the side of the can is somewhat kinked at that edge.

When the cans were weighed, the full one weighed 63 pounds, and the other 42 pounds, showing a loss of 21 pounds. I opened both of the cans to see the condition of the honey, and both were candied quite hard.

DAVID HALL,

Wyoming Co., N. Y., Nov. 13.

[We have known several instances this year, of tin cans breaking, and thereby causing a loss of honey. They were poorly made cans, and should not have been used in the first place. Of course, a poor tin can is almost as bad as a leaky barrel, only with a can there can't more than 60 pounds of honey get away, while with a barrel—well, it depends upon its size.—EDITOR.]

**Dividing - Cheap Bee-Feeder.**

Last fall I bought 12 colonies of bees but was robbed out. I tried dividing but made a bad job of it. Some colonies didn't have queens, some queens didn't lay, and some swarmed and made the parent colonies too weak, so

Sharples Cream Separators; Profitable Dairying

**Strong, Healthy Chicks**

are hatched by our incubators, and more of them than nests can hatch. Why because our regulator never fails to keep the heat just right. Catalogue printed in 5 languages gives full descriptions, illustrations and prices, and much information for poultry raisers. Sent for 6 cents.

DES MOINES INCUBATOR CO.,  
Box 71 Des Moines, Ia.

Please mention Bee Journal when writing

**BEE-SUPPLIES !**

**Root's Goods at Root's Prices**  
POUDER'S HONEY-JARS and everything used by bee-keepers. Prompt Service—low freight rate. Catalog free. WALTER S. POUDER,  
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**Queen-Clipping  
Device Free...**

The MONETTE Queen-Clipping Device is a fine thing for use in catching and clipping Queen's wings. We mail it for 25 cents, or will send it FREE as a premium for sending us ONE NEW subscriber to the Bee Journal for a year at \$1.00; or for \$1.10 we will mail the Bee Journal one year and the Clipping Device. Address,  
GEORGE W. YORK & COMPANY,  
118 Michigan St., Chicago, Ill.

# The Novelty Pocket-Knife.

Your Name and Address on one side—Three Bees on the other side.



[THIS CUT IS THE FULL SIZE OF THE KNIFE.]

**Your Name on the Knife.**—When ordering, be sure to say just what name and address you wish put on the knife.

The Novelty Knife is indeed a novelty. The novelty lies in the handle. It is made beautifully of indestructible celluloid, which is as transparent as glass. Underneath the celluloid, on one side of the handle is placed the name and residence of the subscriber, and on the other side pictures of a Queen, Drone, and Worker, as shown here.

The Material entering into this celebrated knife is of the very best quality; the blades are hand-forged out of the very finest English razor-steel, and we warrant every blade. The bolsters are made of German silver, and will never rust or corrode. The rivets are hardened German silver wire; the linings are plate brass; the back springs of Sheffield spring-steel, and the finish of the handle as described above. It will last a long time, with proper usage.

**Why Own the Novelty Knife?**—In case a good knife is lost, the chances are the owner will never recover it; but if the "Novelty" is lost, having name and address of owner, the finder will return it; otherwise to try to destroy the name and address, would destroy the knife. If traveling, and you meet with a serious accident, and are so fortunate as to have one of the "Novelties," your POCKET-KNIFE will serve as an identifier; and in case of death, your relatives will at once be notified of the accident.

How appropriate this knife is for a present! What more lasting memento could a mother give to a son, a wife to a husband, a sister to a brother, or a lady to a gentleman, the knife having the name of the recipient on one side?

The accompanying cut gives a faint idea, but cannot fully convey an exact representation of this beautiful knife, as the "Novelty" must be seen to be appreciated.

**How to Get this Valuable Knife.**—We send it postpaid for \$1.25, or give it as a Premium to the one sending us THREE NEW SUBSCRIBERS to the Bee Journal (with \$3.00.) We will club the Novelty Knife and the Bee Journal for one year, both for \$1.90.

GEORGE W. YORK & CO., 118 Mich. St., Chicago, Ill.

Please allow about two weeks for your knife order to be filled.

## PATENT WIRED COMB FOUNDATION

Has no Sag in Brood-Frames.



### Thin Flat-Bottom Foundation

Has no Fishbone in the Surplus Honey.

Being the cleanest is usually workt the quickest of any foundation made.

J. A. VAN DEUSEN,  
Sole Manufacturer,  
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## KEYSTONE DEHORNER

Makes dehorning easy and painless. Cuts on four sides at once. It never bruises nor crushes. Send for circulars.  
M. T. PHILLIPS, Pomeroy, Pa. (Successor to A.C. BROSIUS).

Please mention Bee Journal when writing.

this fall I doubled them up until now I have 15 colonies. I secured only 150 pounds of honey. I think I will let them swarm after this.

It is very warm here now, and bees are flying every day.

On page 698 Iowa asks how to make a bee-feeder. This is the way I made one: I took a 2x4 16-inch board, sawed notches in it, and nailed  $\frac{1}{4}$ -inch strips on the sides, then poured hot wax into the cracks. I put a cover on it, and bored a hole  $\frac{1}{4}$  inch from the top of the feeder, in which I put a tin spout. Then I set it in the top of a super, and filled up the super with chaff. Next spring I can feed by just taking the cover off.

D. H. KELLER.

Jefferson Co., Colo., Nov. 12.



## A Poor Year for Bees.

My bees came thru last winter alive, but few in a hive. The cold weather the last of April and all thru May was a stunner, but most of my 85 colonies survived and filled their hives with apple-bloom honey and brood, so they were in fair condition for white-clover

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must be simple in operation,

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SURE HATCH INCUBATOR CO., Clay Center, Nebraska.



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You pay for what you get in this world. You understand that. But as a business proposition we want you to try our great medicine for Indigestion, Constipation, Biliousness, Sick Headache, Insomnia, "the Blues," and like complaints—

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We know you won't buy it, until you know something about it. The best way to get you to know how good it is, is to let you try it. That's what we do. Send stamp for "Health" booklet, and we will send you a free sample package, that you may try it yourself. We know you will always keep it in the house, if you once try it. What fairer offer could we make? At all Druggists—10 and 25 cents.

## Handsome Stick Pin FREE!

MODERN REMEDY COMPANY, KEWANEE, ILLINOIS.

[This company will do exactly as it promises.—Editors.]

If, instead of sending for a sample, you send us 25c we will send you "Health" booklet, a 25c box and a handsome gold stick-pin, set with emerald, ruby or pearl, warranted to be worth double the money. Order by number. This is an extra introductory offer. Only one pin to one person. If unsatisfactory, money returned. Send now while the offer is good.



Nov. 29, 1900.

and basswood. When at the close of the latter the dry, hot weather struck this locality, our honey season was over, altho buckwheat was yet to come, but we were so badly scorched that when the buckwheat flow was over, all my bees and myself as well, were amazed to find that all we had to depend upon for the next 8 months was nearly 500 pounds of white honey, and less than 200 pounds of buckwheat; but, fortunately for all concerned, my bees stored the nicest clover and linden honey this year I ever saw, most of which I sold in my home market for 20 cents a pound.

D. F. BLIGHTON.

Fulton Co., N. Y., Nov. 15.

**Preparing the Bees for Winter.**

I started last spring with 8 colonies, have increased to 17, and have sold \$15 worth of honey, besides having plenty for home use in a family of four. I just finished putting them away for the winter yesterday. I winter them outdoors, and this is the way I did:

I built a shed 8 feet wide and 32 feet long, out of rough lumber, and covered it with grooved roofing. It is 5 feet on the lower side, and 7 on the upper side. I used four 2x8 joists, and nailed 2x4's on the edges so they were the width of the hive, and 20 inches apart. I set the hives on them after filling with straw as tight as I could pack it, then I packed straw between the hives and over back of them, also put on a "Hill's device," made out of barrel staves, then put a piece of muslin over the device, and a super on, and then filled it with clover chaff. When the weather gets colder I will put on more straw, but I will keep the fronts of the hives exposed to the weather so the bees can fly out whenever the weather is warm enough to fly. What do you think of that way? Will they get too warm?

FRED TYLER.

Mason Co., Ill., Nov. 17.

**WE MAKE INCUBATORS**

We that hatch strong, healthy chicks and lots of them. Our faith in these facts is such that we send you our **NEW PREMIER Incubator** *ON TRIAL*. You put the eggs in it and make a hatch for yourself. When you have tried it thoroughly and are satisfied, you pay us for it. Isn't that the sensible way to buy and sell incubators? Send 10c stamp for Catalog & "Poultry Helps."

We are also sole makers of Simplicity Incubator.  
COLUMBIA INCUBATOR CO., 5 Water St., Delaware City, Del.

**CONVENTION NOTICES.**

**Minnesota.**—The 12th annual meeting of the Minnesota Bee-Keepers' Association will be held in Plymouth Church, cor. 8th Street and Nicollet Ave., Minneapolis, Minn., Wednesday, Thursday and Friday, Dec. 5, 6, and 7, 1900. An excellent program is prepared and a good time promised. The Horticultural Society meets at the same time and place. Purchase railroad tickets to their society, taking a certificate for the amount paid, and if 100 certificates are secured a reduction to one-third fare for the return trip can be had.

DR. L. D. LEONARD, Sec.

Syndicate Block, Minneapolis, Minn.

**Ontario, Canada.**—The annual meeting of the Ontario Bee-Keepers' Association will be held at Niagara Falls, Ont., Dec. 4, 5, 6, next. There is a very good program arranged, and we feel confident there will be a pleasant and profitable meeting. A hearty invitation is extended to all bee-keepers to attend, and we hope to have many of the United States bee-keepers present.

Streetsville, Ont. W. COUSE, Sec.

**New York.**—The Ontario County Bee-Keepers' Convention will be held in Canandaigua, N.Y., Dec. 13 and 14. There will be a bee-keepers' institute in connection with the same, and Editor W. Z. Hutchinson has been engaged to attend.

Naples, N.Y. FRIEDEMANN GREINER, Sec.

**ARE YOU MAKING MONEY?**

Out of your poultry we mean. If not, there is something wrong. May be you don't start right. We have a book called the **20th CENTURY POULTRY BOOK**, which helps start poultry people right and then keeps them right. Tells all about the business and about the best—**Reliable Incubators and Brooders**—used all over the world. Book sent for 10c. Order at once. **Reliable Incubator and Brooder Co., Box B-2 Quincy, Ill.**



# The "Barler Ideal" OIL=HEATER....

Saves Its Cost Every Year!  
NO ODOR! NO SMOKE! NO ASHES!

Costs only a cent an hour to run it.



No. 4 "Barler Ideal" Oil-Heater.

**GEORGE W. YORK & CO.,**  
118 Michigan St., Chicago, Ill.

**MERIT ALWAYS WINS.**

The hard times of the past three or four years have been very destructive to all industrial affairs, and the railroads have had unusual amount of difficulty in making both ends meet. Roads that have, during this trying period, earned dividends while at the same time affording high-class transportation facilities to their patrons, have, indeed, been fortunate. And such an event speaks well for the management of the roads.

The record of the Nickel Plate Road during the recent period of industrial depression, has indeed been remarkable, and it speaks most eloquently of the conservative judgment of the managers. For this road has made great and steady progress in the material improvement of its roadway and appliances, and in perfecting its equipment. The interests of the public have been in no wise neglected; in fact, the success of this road has inured to the benefit of the public, as much, if not more, than to the stockholders. The condition of the road to-day shows this. Great and valuable improvements of a permanent character have been made—in the shape of strengthening the roadway, bridges and other accessories, and procuring new and improved safety appliances; new coaches have been added, elegant Pullman sleeping-cars put on, new and powerful engines have been placed in service, and everything has been done to raise the standard of the road, to perfect its service, and to give it a leading place among the best roads in the country. The result has been obvious. The people have observed the

progressive spirit of this road, have given it a liberal patronage, have enjoyed its excellent facilities, and that tells the whole story of a highly successful enterprise.

Among the most noteworthy improvements effected by the Nickel Plate Road is the introduction of a first-class dining-car service, which has won the approval of the best class of patrons. Then the coaches have been illuminated by the brilliant Pintsch gas, heated by steam, and placed in care of a colored porter, so the passengers have had the best that money can afford, at the lowest rates. The thru train service of the Nickel Plate, running in connection with the West Shore and Fitchburg Railroads over the great Hoosac Tunnel Route, between New York, Boston and Chicago—ranks with the best in the country, and has become deservedly popular. Elegant new coaches, and palatial Pullman buffet sleeping-cars run thru without change; the service is unexcelled, the time fast, scenery most fascinating.

Located along the south shore of Lake Erie are many substantial and attractive summer resorts that are yearly growing in popularity, and this class of travel promises a continual increasing source of revenue to the Nickel Plate Road.

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**ELECTRIC HANDY WAGONS**  
excel in quality, strength, durability. Carry 4000 lbs. They are low priced, but not cheap. Electric Steel Wheels—straight or staggered oval spokes. Any height, any width of tire to fit any wagon. Catalogue FREE. ELECTRIC WHEEL CO., Box 16, Quincy, Ill.

# Grand Clubbing Offers.

SUPERSIDING PREVIOUS OFFERS.

## Magazines and Post Fountain Pen to the amount of \$9.00 for \$5.00

(See description of Post Fountain Pen, American Bee Journal, Nov. 15th, page 730.)

Gleanings in Bee-Culture .....	\$1.00	\$5.00
Review of Reviews (new) .....	2.50	
Success .....	1.00	
McClure's .....	1.00	
Pearson's .....	1.00	
Post Fountain Pen .....	2.50	
	\$9.00	

All of these sent to one or separate addresses  
one year for.....

Read Everything in this Column.      \* Here are a few Sample Combinations.

### Sample Combinations.

		Regular Price.	Our Price
Gleanings, Review of Reviews (new), McClure's, and Success .....	" " "	\$5.50	\$3.50
" " " and Cosmopolitan .....	" " "	5.50	3.50
" " Pearson's and Cosmopolitan .....	" " "	5.50	3.25
" Success, McClure's, and Cosmopolitan .....	" " "	4.00	2.75
" Pearson's, and McClure's .....	" " "	4.00	2.75
" Cosmopolitan, and Pearson's .....	" " "	4.00	2.50
" and Cosmopolitan .....	" " "	3.00	2.00
" and Pearson's .....	" " "	3.00	2.00
" and McClure's .....	" " "	3.00	2.25
" and Munsey's .....	" " "	3.00	2.25
and Success .....	" " "	2.00	1.50
and Cosmopolitan .....	" " "	2.00	1.50
" and Pearson's .....	" " "	2.00	1.50
" and Woman's Home Companion .....	" " "	2.00	1.50

OTHER COMBINATIONS CAN BE MADE FROM THE TABLE BELOW. Every order must include Gleanings

No. 1. * 25 cents	No. 2. * 50 cts.	No. 3. * 75 cts.	No. 4. * \$1.00	No. 5. * \$1.25	No. 6. * \$1.50
Am. Poultry Advo. Poultry Keeper. Rel. Poultry Jour. Poultry Monthly. Am. Poultry Jour. Farm Poultry. Farm and Home. Farm & Fireside. Ag. Epitomist. Prairie Farmer. Farm Journal.	Success. Woman's Home Comp. Ohio Farmer. Michigan. Practical Kansas Indiana Cosmopolitan. Pearson's.	Munsey's. McClure's. Rural New Yorker. Nat. Stockman and Farmer.	American Gardening. Christian Herald Post Fountain Pen.	Review of Re- views. Country Gen- tleman. Youth's Com- panion. Orders for these three must be for new subscribers.	Pacific Rural Press. Country Gen- tleman (re- newal.)

\* These prices are not the publishers' prices for these papers, but they are our special reduced prices when taken in connection with GLEANINGS. In many cases they are just one-half the regular rate.

### HOW TO GET THE PRICE FOR ANY OR ALL OF THE PAPERS NAMED ABOVE.

1. Gleanings in Bee-Culture, one year, \$1.00.
2. If you want only one additional paper, add the price found in the top of the column in which that paper appears. For instance: Gleanings, and Success (2d col.) will cost you \$1.50.
3. If you want several papers in addition to Gleanings, each one may be had at the price named at the top of the column. For instance: Gleanings, Success (2d col.) and Rural New-Yorker (3rd col.) will cost you \$2.25.
4. You may select as many papers from each column as you wish.
5. Every order sent us must include Gleanings.

**CONDITIONS.**—Offers subject to withdrawal Dec. 31, 1900. Subscriptions to the Review of Reviews, Youth's Companion, and Country Gentleman must be strictly new. New subscriptions sent for Success, Youth's Companion, or Gleanings will receive the balance of this year free. Neither the Review of Reviews nor Post Fountain Pen will be sent in any combination amounting to less than \$2.50.

**CHRISTMAS PRESENTS.**—We will send all papers or pen to one or separate addresses, as desired. In this way you can easily make desirable Christmas Presents.

THE A. I. ROOT CO., Medina, Ohio.

## HONEY AND BEESWAX

### MARKET QUOTATIONS.

CHICAGO, Nov. 24.—There is a demand for fancy white comb honey at 16c that takes all of this grade upon arrival; other grades are less active, with No. 1 white at 15c; amber and travel-stained white ranges from 13@14c, with dark amber and buckwheat comb 10@12c. Extracted, white, 7½@8c; amber, 7@7½c; dark grades, including buckwheat, 6½@6½c. Beeswax, 28c. R. A. BURNETT & Co.

KANSAS CITY, Nov. 16.—Fancy white comb, 15@16c; No. 1 white, 14@15c; amber, 12@13c; dark, 8@9c. Extracted, in 5-gallon cans, white, 7½@8c; amber, 7@8c. Receipts light.

W. R. CROMWELL PRODUCE CO.,  
Successors to C. C. Clemons & Co.

BUFFALO, Nov. 16.—Fancy white comb remains at 17@18c mostly, with rather large receipts. Common selling at 12@16c. Possibly some lots poor enough to go less. We believe the high prices will curtail consumption. Extracted never sells well in Buffalo, but a little might sell at 8@9c in fancy shape.

BATTERSON & Co.

ALBANY, N.Y., Nov. 17.—Fancy white, 17@18c; No. 1, 15@16c; mixt, 13@14c; fancy buckwheat, 13@14c; No. 1, 12@13c; mixt, 12c. White extracted, 8½@9½c; mixt, 8@9c; buckwheat, 6½c. Honey market still firm with good demand; light receipts at high prices, especially for comb honey of all grades.

H. R. WRIGHT.

BOSTON, Nov. 19.—Our market on honey continues strong, with light receipts. Fancy one-pound cartons, 17c; A No. 1, 15@16c; No. 1, 15c; No. 2, 12@13c. Extracted from 7½@8½c cents, according to quality. Beeswax steady at 25@27c.

BLAKE, SCOTT & LEE.

CINCINNATI, Sept. 21.—The demand for fancy comb honey is good and finds ready sale at 16@16c; No. 1, 15c. The demand for extracted honey at present is slow and offer same by the barrel as follows: White clover, 8½@9c; Southern, 6½@7½c; Florida, 7@8 cents, according to quality. Beeswax, 27c.

The above are MY SELLING PRICES. I do not handle any honey on commission, but pay spot cash on delivery.

C. H. W. WEBER.

NEW YORK, Nov. 20.—Good demand continues for all grades of comb honey. We quote: Fancy white, 17@18c; No. 1 white, 14c; No. 2 white, 12@13c; amber, 12c; buckwheat, 10@11c. Extracted in fairly good demand at 7½@8½c for white, and 7c for amber; off grades and Southern in barrels at from 65@75c per gallon, according to quality. Not much demand for extracted buckwheat as yet. Some little selling at 5@6c. Beeswax firm at 28 cents.

HILDRETH & SEGELEN.

DETROIT, Nov. 22.—Fancy white comb, 15@16c; No. 1, 13@14c; dark and amber, 10@12c. Extracted, white, 8@8½c; light amber, 7@7½c; dark, 6@6½c. Beeswax, 26@28c.

M. H. HUNT & SON.

SAN FRANCISCO, Nov. 7.—White comb, 13@14 cents; amber, 11@12½c; dark, 8@9c. Extracted, white, 7½@8c; light amber, 6½@7½c; amber, 5½@6½c. Beeswax, 26@28c.

Owing to slim stocks, business in honey of all descriptions is of necessity restricted to very small compass. High-grade water white, either comb or extracted, is especially scarce. Previous quotations remain in force, with market firm at these figures.

**A HONEY MARKET.**—Don't think that your crop is too large or too small to interest us. We have bought and sold five carloads already this season, and want more. We pay spot cash. Address, giving quality, quantity and price.

THOS. C. STANLEY & SON, Fairfield, Ill.

**Wanted To Buy Honey**  
What have you to offer  
and at what price?  
ED WILKINSON, Wilton, Wis.

Please mention Bee Journal when writing.

**For Sale** 15 colonies of bees in good chaff hives; also a good farm.

46A31 ALBERT BAXTER, Muskegon, Mich.

**DO YOU WANT A**  
**High Grade of Italian Queens**  
OR A CHOICE STRAWBERRY?  
Send for descriptive price-list.

D. J. BLOCHER, Pearl City, Ill.

47A26 Mention the American Bee Journal.

We have a Large Stock on hand  
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OR ANYTHING YOU WANT IN THE  
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Our Falcon Sections and New Process Foundation are ahead of everything, and cost no more than other makes. New Catalog and copy of THE AMERICAN BEE-KEEPER free. Address,

**THE W. T. FALCONER MFG. CO.,  
JAMESTOWN, N. Y.**

W. M. GERRISH, East Nottingham, N. H., carries a full line of our goods at catalog prices. Order of him and save freight.

## SWEET CLOVER

And Several Other Clover Seeds.

We have made arrangements so that we can furnish Seed of several of the Clovers by freight or express, at the following prices, cash with the order:

	5lb	10lb	25lb	50lb
Sweet Clover (white) .....	.60c	\$1.00	\$2.25	\$4.00
Sweet Clover (yellow) .....	\$1.50	2.80	6.25	12.00
Crimson Clover .....	.70c	1.20	2.75	5.00
Aisike Clover .....	.80c	1.50	3.50	6.50
White Clover .....	.90c	1.70	3.75	6.50
Alfalfa Clover .....	.80c	1.40	3.25	6.00

Prices subject to market changes.  
Add 25 cents to your order, for cartage, if wanted by freight, or 10 cents per pound if wanted by mail.

**GEORGE W. YORK & CO.**  
118 Michigan Street, CHICAGO, ILL.

### IF YOU WANT THE BEE-BOOK

That covers the whole Apicultural Field more completely than any other publication, send \$1.25 to Prof. A. J. Cook, Claremont, Calif., for his

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Liberal Discounts to the Trade.

## CHEAP FARM LANDS

Located on the Illinois Central R.R. in

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### CORN AND HOGS.

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Write for Pamphlets and Maps.

**E. P. SKENE, Land Commissioner,**  
Ill. Cent. R.R. Co., Park Row, Room 413,  
24A24t CHICAGO, ILL.

Please mention Bee Journal when writing.

## FALL SPECIALTIES

Shipping-Cases, Root's No-Drip; Five-Gallon Cans for extracted honey, Danz. Cartons for comb honey. Cash or trade for beeswax. Send for catalog. M. H. HUNT & SON, Bell Branch, Mich.

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Because it has always given better satisfaction than any other. Because in 23 years there have not been any complaints, but thousands of compliments.

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## Langstroth on the Honey-Bee, Revised

The Classic in Bee-Culture—Price, \$1.25, by Mail.

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AT ALL TIMES.

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**CHAS. DADANT & SON,**  
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MADE TO ORDER.

### Bingham Brass Smokers,

Made of sheet-brass which does not rust or burn but should last a life-time. You need one, but they cost 25 cents more than tin of the same size. The little pen cut shows our brass hinge put on the three larger sizes.

No wonder Bingham's 4-inch Smoke Engine goes without puffing and does not



### DROP INKY DROPS.

The perforated steel fire-grate has 381 holes to air the fuel and support the fire. Prices: Heavy Tin Smoke Engine, four-inch Stove, per mail, \$1.50; 3½-inch, \$1.10; three-inch, \$1.00; 2½-inch, 90 cents; two-inch, 65 cents.

### BINGHAM SMOKERS

are the original, and have all the improvements, and have been the STANDARD OF EXCELLENCE for 22 years. Address, T. F. BINGHAM, FARWELL, MICH.

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## One-Pound Square Honey-Jars,

\$5.00 a gross; 5 gross, \$4.80 per gross.

**WINTER-CASES**, 10 for \$7.00. **CARTONS**—the best made. Catalog of Apiarian Supplies and Queens free.

Apiaries—Glen Cove, L.I. I. J. STRINGHAM, 105 Park Place, New York, N. Y.

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## Four Celluloid Queen-Buttons Free

### AS A PREMIUM

For sending us ONE NEW SUBSCRIBER to the American Bee Journal for three months with 30 cents, we will mail you FOUR of these pretty buttons for wearing on the coat-lapel. (You can wear one and give the others to the children.) The queen has a golden tinge. This offer is made only to our present regular subscribers.

**NOTE.**—One reader writes: "I have every reason to believe that it would be a very good idea for every bee-keeper to wear one of the buttons as it will cause people to ask questions about the busy bee, and many a conversation thus started would wind up with the sale of more or less honey; at any rate, it would give the bee-keeper a superior opportunity to enlighten many a person in regard to honey and bees."

Prices of Buttons alone, postpaid: One button, 8 cts.; 2 buttons, 6 cts. each; 5 or more, 5 cts. each. (Stamps taken.) Address,

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